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Information Centre for Industry

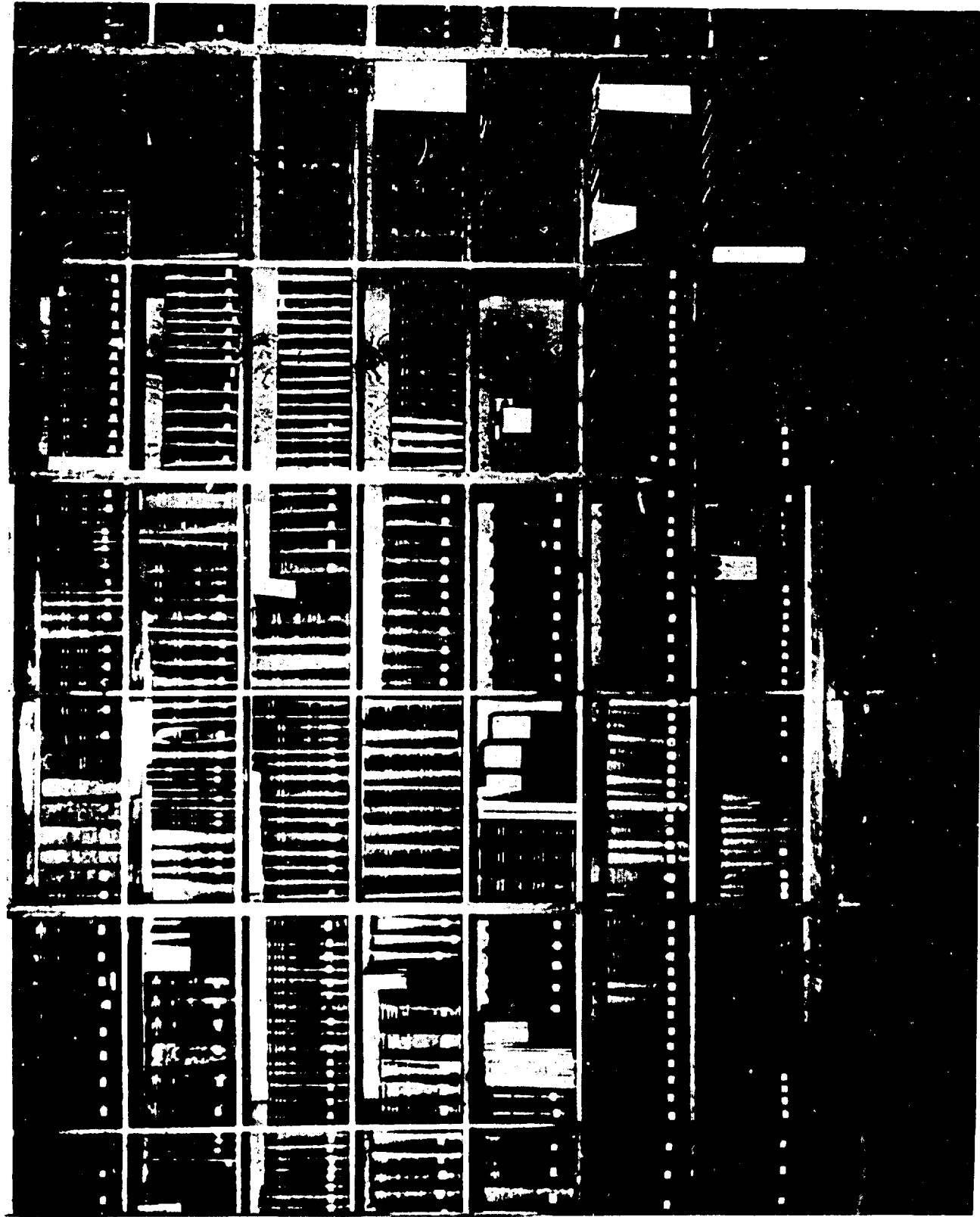
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The National Science Library:



A small part of the more than 300 Abstracting and Indexing Services received by the National Science Library.

information centre for industry

By Jack E. Brown

"EXPLOSION" IS A WORD which has been widely used to describe the developments of the past 25 years. It is almost impossible to pick up a newspaper and not find articles on nuclear explosion, the population explosion, production explosion, and, more recently, the explosion in scientific and technical information.

It has been variously estimated by experts in the field that from 25,000 to 85,000 scientific and technical journals are being published throughout the world today. If someone is endeavouring to prove that the information problem is completely out of hand and wishes to emphasize the explosion angle, he cites the higher figure of 85,000 titles. If he wishes to provoke alarm and despondency, he reinforces his first statement by pointing out that this output of scientific and technical information is doubling in volume every 10 to 15 years.

But if he is trying to give a realistic picture of the situation without belittling the problem, and bases his figures on the number of journals which the largest scientific and technical libraries now receive, he will use the lower figure of 25,000 titles. The reason for this discrepancy of estimates is the difficulty of defining what is really a journal, a periodical, or a serial. If you include every circular or progress report issued at irregular intervals by every department of every national government, then you will soon reach the 85,000 figure.

But the Director and staff of the



The circulation control desk and current periodicals reading room, National Science Library.

in brief: *The National Science Library in Ottawa has developed services which ensure that the scientific and industrial communities of Canada can have ready access to the world's output of scientific and technical literature. The Library's services, many of them free, are available to any individual scientist or engineer who can define his problem and make his needs known. The needed information can be provided, thanks to the Library's unmatched resources and organization, with a minimum of delay.*

National Lending Library of Science and Technology in England, after making a detailed study of publications in the field of science and technology, arrived at the figure of approximately 25,000 journals. Similar studies made at the National Research Council in Ottawa tend to confirm this figure.

Be that as it may, it is obvious that the ever-increasing output of scientific and technical literature is such that it is virtually impossible for a scientist or engineer to be fully aware of everything that is being written pertaining to his particular field of interest or specialization. New abstracting and indexing services, science citation indexes, and similar secondary sources, are being produced at almost the same rate as the primary sources. Because of the overlapping of scientific disciplines, it is necessary to consult most of these services when carrying out a literature search—an almost impossible task. Because of this failure of conventional methods to solve the information problem, intensive efforts are being made to utilize the fantastic storage capacity and the incredible output speeds of computers to facilitate the storage and retrieval of information.

The National Science Library of Canada, established in Ottawa some 40 years ago to serve the scientific staff of the National Research Council, now houses one of the world's outstanding collections in science and technology. In coping with the information explosion, the Library is continually developing services to ensure that the scientific and industrial communities of Canada have ready access to the world's output of scientific and technical literature.

Growth of the Library's Collection

In the 40 years since its foundation, the Library has grown from a collection of little more than 1,000 volumes to over a half-million volumes, and there is nothing to indicate that this rate of growth

will not continue for the next 40 years.

As the N.R.C. Library's resources were strengthened, scientists and others turned to it for publications and information which could not be obtained elsewhere. Inevitably, the services provided by the Library to the Council's scientific staff were extended to scientists and engineers in all parts of Canada until these services became truly national in practice if not in name. Accordingly, when the National Library was established, it was decided that, rather than build up a second major science and technology library in Ottawa, the N.R.C. Library would formally assume the responsibility for acquiring, storing and making available on a national scale all publications in the fields of science and technology.

It is virtually impossible today for a library to be completely self-sufficient even in rather limited fields of knowledge. Since this is so, the National Science Library's plan of development is one of supplementing and complementing other federal scientific and technical libraries in Ottawa. The holdings of the National Science Library, which include approximately 12,000 different journals, have been built up in close collaboration with the libraries maintained by such federal departments as Agriculture, Mines and Technical Surveys, and National Health and Welfare. The National Science Library takes whatever action is necessary to ensure that all scientific and technical publications worthy of the name are readily available either in its own collections or elsewhere in Ottawa.

As a result of these co-operative efforts, it is rarely necessary to go outside of Ottawa, or even outside of Canada, to meet a request for even obscure and little-used books or journals. When a needed publication is not available in Ottawa or in Canada, it can be located and obtained through the use of

union lists, catalogues and other co-operative tools, and by means of Telex, which links the National Science Library with other major libraries and information centres in Canada and throughout the world.

Information Services

The acquisition and organization for maximum use of all publications within given subject fields are traditional activities which are expected of any good library. However, in this day and age a research library such as the National Science Library cannot act solely as a repository or depository for the world's output of scientific and technical literature. It is not enough to say, "We are collecting everything that is being published; come and help yourselves". The Library must develop techniques and services which will enable it to satisfy, with a minimum of delay, a request for a specific piece of information, a few pages from a book, or an article from a journal, regardless of whether the request originates across the street or 2,000 miles away.

The National Science Library is devoting every means at its disposal to develop this phase of its service. To use the jargon of the time, the National Science Library is constantly seeking ways and means of "expediting the storage, retrieval and dissemination" of scientific and technical information on a national scale.

Journals, periodicals, serials (call them what you will) constitute at least 80 per cent of the collection of a scientific and technical library. One of the National Science Library's first steps to ensure the fullest use of existing library resources was the compilation of a union list of scientific serials held by libraries across Canada. The latest edition of this volume lists more than 22,000 scientific and technical journals held by 155 libraries. The next edition will probably list 25,000 different titles.

It is evident that Canadian libraries hold most of the scientific and technical journals which are being published in the world today. The use of this tool is obvious, for although a needed journal may be obtained from the National Science Library, it makes little sense for an enquirer 2,000 miles away to send his request to Ottawa if the journal is available in a library two blocks away.

To supplement this union list of scientific serials, the National Science Library also publishes a complete list of the titles and holdings of the 12,000 journals it now receives. The compilation of such a list is a formidable task. But with the aid of computers and related data processing equipment, the entire list is up-dated and run off in a matter of hours and distributed at regular intervals to libraries across Canada.

To further supplement these tools, the National Science Library twice a month publishes a list of its latest accessions, grouped by broad subject. This is distributed free of charge to Canadian libraries and other interested organizations.

All this is very good and necessary. We have a National Science Library with a comprehensive collection of scientific and technical publications, and means for locating items it does not hold. But how are these publications and the information they contain placed in the hands of those who require and will benefit from the information? The first and most obvious way to utilize the resources and services of the Library is by direct consultation of materials in Ottawa. Since this procedure is impossible for the majority of Canadian scientists and engineers, needed publications are made available by direct loans to libraries and to individuals. To speed up deliveries, parcels are sent first class mail and delivery charges in both directions are met by the Library.

Borrowing Procedures

Basically, any item held by the Library can be borrowed. However, there are occasions when the physical transportation of a book or periodical is difficult or impossible. At such times, photocopies or Xerox copies of the required pages are sent to the enquirer free of charge. We are looking forward to

the day when, by means of long distance Xerography, a printed page in Ottawa can be transmitted over existing communication channels and, in a matter of seconds, reproduced in Halifax or Vancouver. At the moment the costs of long distance transmission by this system are prohibitive.

A research library cannot serve

Library publications include:

- Union List of Scientific Serials in Canadian Libraries — Lists more than 22,000 scientific and technical journals held by 155 Canadian libraries. (In 2 volumes: basic volume, \$25.00; supplement, \$9.00)
- Serial Publications in the Library — Complete record of titles and holdings of journals and other serials received by the National Research Library. (\$5.00)
- Recent Additions to the Library — Twice-a-month bulletin lists the Library's major new acquisitions by subject. (Free to libraries and other interested organizations.)
- Translation Services — A description of activities of the Library's Translation Section. (Free on request.)
- List of Technical Translations — Listing, with author index, of 1,147 translations prepared in the National Research Council's Technical Translations series. (Free on request.)
- Photocopying Services — Outlines procedures to be followed for obtaining photostats, Xerox copies, and microfilms of material held by the Library.
- Directory of Canadian Scientific and Technical Periodicals — Classified Guide to currently published titles. (\$1.00)

Library services include:

- Science Information Service — Staffed by librarians trained in science or engineering, the Service answers enquiries from (and conducts literature searches and prepares bibliographies for) scientists, engineers and industrialists. Free of charge.
- Interlibrary Loans and Photocopying Service — Lends books and periodicals not readily available in other parts of Canada. Where an item cannot be loaned, provides a photostat or Xerox copy at nominal charge.
- Translation Services — Prepares translations of foreign scientific papers as requested by NRC's scientific staff. Publishes and distributes these either free or at nominal cost, to interested scientists throughout the world. Maintains the Canadian Index of Scientific Translations, which records the location of more than 100,000 translations into English or French of foreign scientific papers.

solely as a collecting point for scientific and technical publications. Thus, in addition to lending materials and providing photocopies, the National Science Library has developed a research or information service for the express purpose of exploiting the Library's resources for the benefit of scientists, engineers and industrialists in Canada. This information unit is staffed by people who are trained in science or engineering, and in library and information procedures, and who have a detailed knowledge of scientific and technical publications. This staff is responsible for answering enquiries which entail compiling bibliographies, carrying out literature searches, identifying and locating obscure publications and references, and answering requests for scientific and technical information. In doing so, the staff utilizes the total literature and information sources of Canada and—for that matter—of the world.

The research librarians work closely with the Council's scientific staff, seeking the latter's advice and assistance as required to supplement their own knowledge and skill in the use of scientific and technical literature. There is also close collaboration between the research staffs of the Library and the N.R.C.'s Technical Information Service, and questions, particularly those from industry which require engineering know-how or industrial experience, are normally handled by the Technical Information Service staff.

There is no charge made for these information services. The only thing we ask is that the enquirer consult his local public, university, company or departmental library before turning to the National Science Library for assistance. This is in keeping with our belief that the services of the National Science Library should reinforce or supplement local services, and not supplant or replace them.

Translation Services

Last but certainly not least, are the translation services provided by the National Science Library. At present, translations of foreign scientific and technical papers are prepared primarily at the request of the Council's scientific staff. They are published and distributed without charge to libraries, scientific organizations and interested individuals. Occasionally an outside request for the preparation of a translation is met if the contents of the paper appear to be of wide interest to Canada. It is worth noting that the Translations Section has, for several years, prepared a cover-to-cover English translation of the Soviet journal, *Problemy Severa*, or *Problems of the North*.

An index of scientific and technical translation is maintained by the Library which records more than 100,000 translations, into English or French, which have been prepared in all parts of the world and reported to us by such agencies as the Office of Technical Services in Washington, the European Translations Centre in Delft, and Aslib in London. Anyone who wishes to find out whether a foreign language paper has been translated, or who is considering the possibility of preparing a translation, should get in touch with the National Science Library. If the translation has been recorded, information can be promptly provided as to its availability and, in many cases, a copy can be supplied from the Library's extensive file of translations.

All these services still do not provide the final answer to Canada's scientific and technical information problems. Much more can be done and should be done. Fortunately, Canada, through the N.R.C., has established an effective framework upon which future improvements in the techniques for disseminating information can be built. The National Science Library, a major unit in this frame-

work, has in itself a tremendous built-in potential for service to science and industry. The degree to which this service is improved, expanded and utilized, depends almost entirely on the amount of staff, space and money which Canada wishes to devote to this purpose.

The use of automated techniques to facilitate the storage and retrieval of information could in itself be made the subject of an article. Computers and related data processing equipment are powerful weapons for attacking the information problem, and this equipment is being used to an ever-increasing extent in a wide variety of library procedures and information processing operations.

Electronic Storage and Retrieval

The use of electronic equipment has been particularly successful for storing and retrieving quantitative data, for various aspects of bibliographical control, for searching a limited volume of literature in a specific subject field, and for promoting a program of current awareness. The bottleneck which is preventing large research libraries from the even wider use of such techniques arises from the almost insuperable task of scanning, indexing and converting to machine-readable form the vast output of scientific and technical literature. Once this input phase of the operation can be mechanized, the bottleneck will have been broken, for by comparison it is a relatively simple operation to store information on magnetic tape and achieve its retrieval in a matter of seconds by means of a computer.

Unfortunately, there have been many instances of unseemly haste to get on the electronic band wagon, and expensive and sophisticated equipment has been used to store and retrieve information when conventional indexing systems would have been more efficient and less costly. We have all too often attempted to use a sledge

hammer to kill a mouse. At the National Science Library, computers and data processing machines are being used successfully to perform tasks which, because of the volume of material to be handled, can no longer be dealt with through conventional methods — for example, for the compilation and listing of the holdings of scientific and technical journals, for listing and preparing permuted subject indexes to N.R.C. publications, and for listing and up dating subject headings used in indexing technical literature. We are now experimenting with the use of electronic equipment for expediting many clerical operations and for bringing to the attention of scientists current papers pertaining to their particular interests. The equipment has not yet been designed which makes it practical or economically sound to use a computer to retrieve from the total

holdings of the National Science Library all papers or information pertaining to a specific subject.

Be Prepared to Define Problem

This information business operates on a two-way street. The National Science Library can and does anticipate the information needs of the Canadian scientific and industrial community, through its comprehensive acquisition of publications and information, and through the issuance of lists of journal holdings, accession lists, and bibliographies in broad subject areas. However, without feedback from the users of this material, there is a limit to which this anticipatory program can be carried. It is clearly pointless and probably impossible to spew out, like buckshot, collections of information on a wide variety of topics, in the hope that some of the information will hit the bull's eye.

The individual scientist or engineer, if he is to take full advantage of the services provided, must be prepared to define his problem and to make his needs known. Once this is done, the National Science Library makes every effort to place in the hands of the enquirer, with a minimum of delay, the information he requires.

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About the Author

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